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Workshop @ deRSE19: Libraries for Research Software & Engineers

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The workshop was hosted by five people from library and infrastructure environments. As information managers we discussed what libraries are already doing and should do in the future to further explore software engineering and engineers. The topic attracted participants with diverse backgrounds in research software engineering and library and information science. Our goals were to generate/strengthen awareness of the topic of Research Software & Engineers [RS(E)] in libraries, to jointly identify fields of action for libraries, to collect and collaboratively develop ideas and materials for use in libraries, and to interconnect the RSE community with libraries.

Introduction

Katrin Leinweber from TIB Hannover opened and moderated the workshop. After a short round of introductions of all the participants, we started to present the three subtopics of this workshop in short impulse lectures, from which the participants then choose one to pursue. For the treatment of the topics we decided to use the Speedboat procedure¹ known from agile project management. We worked with a diagram of a sailing boat and an island. The anchor of the sailboat represents the challenges of the respective topic. The wind in the sails gives the company strength and stands for aspects that help us to achieve our goal. The goal in turn is embodied by the island, which represents the desired state for the respective topic.

Software Discovery and its tools

Discussions revealed that developers utilize general purpose search engines to find code snippets, for example in order to remind themselves how a certain algorithm was implemented. Software for re-use purpose is also searched for in general purpose search engines and within the researcher's social network.

BASE² as a search engine for academic audiences does show software from over 7000 sources it harvests. User Interface refinements to support this use case were discussed, such as aggregating

¹"Speedboat procedure": <https://klaxoon.com/blog/speed-boat-an-agile-method-to-discover>.

²BASE: <https://www.base-search.net/>.

multiple versions of the same software into a single entry, with the latest version displayed primarily. It was also suggested to implement full text and source code search (in addition to metadata search) in order to increase its usefulness. Zenodo.org³ becomes more popular as a software repository due to its integration with GitHub⁴ which allows publication with a DOI and thus proper citation⁵ metadata. Software Heritage⁶ was shortly discussed as an archival effort to prevent loss of research software as it may happen on code collaboration platforms. We finished the discussion with ideas on how to make software and the relevant repositories more visible. A registry similar to what re3data⁷ does for research data could be a promising endeavour.

Open Educational Resources

In the second track of the workshop, we set out to collect existing Open Educational Resources on RSE and to show why libraries can be good partners of the RSE community in terms of education and training. We agreed in advance that mastery of the tools is particularly important for research and that software has an outstanding importance as a tool today. First, we collected existing offers for training (Carpentries⁸ – Software⁹, Data¹⁰, Library¹¹, ProgrammingHistorian¹², Exercism¹³), for documentation (Read the Docs¹⁴, MkDocs¹⁵), and collections of interesting aspects in general (awesome lists¹⁶). We quickly agreed that there are already many offers and that we as libraries should rather concentrate on collecting, curating, improving and above all disseminating the existing offers. We identified potential problems for this in institutional support – although the topic of research software is currently coming to the fore, the necessary structures at the institutions are still lacking. The offers collected so far are also based on voluntary work, which is often carried out in leisure time in addition to regular work. Further, the sheer quantity of available offers is challenging.

Just as good programmers try to solve a problem by writing as little code as necessary¹⁷, re-using well-established, shared code libraries, knowledge workers should take on the challenge of contributing to existing resources, rather than creating their own. Although the latter is a common criterion in evaluations, promotions et cetera, it exacerbates the problem of curating or even just reviewing the sheer quantity of available material.

³Zenodo – Type “Software”: <https://zenodo.org/search?page=1&size=20&q=&type=software>.

⁴GitHub “Making Your Code Citable” <https://guides.github.com/activities/citable-code/>.

⁵Research Software Citation: <https://cite.research-software.org/>.

⁶Software Heritage: <https://www.softwareheritage.org/>.

⁷re3data: <https://re3data.org/>.

⁸The Carpentries: <https://carpentries.org/>.

⁹Software Carpentry: <https://software-carpentry.org/>.

¹⁰Data Carpentry: <https://datacarpentry.org/>.

¹¹Library Carpentry: <https://librarycarpentry.org/>.

¹²The Programming Historian: <https://programminghistorian.org/>.

¹³Exercism: <https://exercism.io/>.

¹⁴Read the Docs – Create, host, and browse documentation: <https://readthedocs.org/>.

¹⁵MkDocs – Project documentation with Markdown: <https://www.mkdocs.org/>.

¹⁶For example list on GitHub: “awesome – Awesome lists about all kinds of interesting topics”
<https://github.com/sindresorhus/awesome>.

¹⁷David Strauss: “All Code is Debt”, February 12, 2014, <https://pantheon.io/blog/all-code-debt>.

RSE and the Management of Research Data

The third group discussed the close connection of research software and research data. In many cases publication and archival of research data without the used research software is useless. This causes several challenges for example for software of measure devices and simulation. Libraries have to offer new services in close cooperation with researchers and research software developers. Libraries have useful knowledge on aspects like metadata, protocols, vocabularies/ontologies, persistent identifiers. This knowledge may lead to new services about reproducibility, discovery, free or restricted access to research data and software.

Research is changing and becoming more complex. Diversity of researchers' needs and use cases require flexible cooperation between librarians, researchers and software developers. Small and concrete pilot projects should help to develop new ways of cooperation.

Future Work

The organizers consider pursuing the topic in the future. Making software repositories more accessible may be one activity. In our experience, libraries will have the most impact by connecting scientists and users to existing tools, curation forums (GitHub topics¹⁸) and initiatives like Carpentries¹⁹ or Open Source Guide²⁰. Stay tuned.

deRSE Conference Review

After three successful UK conferences for Research Software Engineering the first RSE conference in Germany²¹ took place at the Albert Einstein Science Park²² in Potsdam. The organizers created a wonderful atmosphere and a sophisticated and balanced schedule. Many talks were recorded and have been published in a dedicated video repository²³. There has been praise²⁴ and some criticism due to some sponsors involved. There are more national conferences of this kind scheduled²⁵ but rumor has it that an international conference is in the making.

¹⁸GitHub topics: <https://github.com/topics/>.

¹⁹The Carpentries: <https://carpentries.org/>.

²⁰Open Source Guides: <https://opensource.guide/>.

²¹deRSE19 Conference: <https://www.de-rse.org/en/conf2019/>.

²²Albert Einstein Science Park: https://en.wikipedia.org/wiki/Albert_Einstein_Science_Park.

²³deRSE19 video recordings: <https://av.tib.eu/series/644>.

²⁴Helmholtz Open Science Newsletter vom 24.07.2019

<https://os.helmholtz.de/bewusstsein-schaerfen/newsletter/archiv/newsletter-75-vom-24072019/#c19002>

²⁵For example in the Netherlands, see Call for contributions – NL-RSE19:

<https://nl-rse.org/2019/07/09/NL-RSE-2019.html>.

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